REMARKS

This Reply to Office Action is responsive to the Office Action mailed on April 8, 2004. Claims 1-16 and 18-31 are pending in the present application. Applicants have amended claims 1 and 20, and canceled claims 30 and 31. Accordingly, claims 1-16 and 18-29 are now at issue.

The Examiner rejected claims 1-16 and 18-29 under §103(a) as being unpatentable over *Standish, et al.* (U.S. 6,600,106) in view of *Puetz* (U.S. 5,734,776). The Examiner also rejected claims 30 and 31 under §103(a) as being unpatentable over *Standish, et al.* in view of *Puetz* and further in view of *Caveney* (U.S. 6,614,978). Applicants submit that the present invention is patentable over the cited prior art.

Each of independent claims 1 and 20, as amended, recites "the central section includes two panel sections angled outwardly in an inverted V-shape, . . ., the central section includes a substantially flat separator portion connecting the two panel sections . . ." Applicants submit that the combination of elements recited in amended claims 1 and 20 is patentable over the cited prior art, taken alone or in combination.

A proper consideration of obviousness under 35 U.S.C. §103(a) requires four factual inquires: 1) determining the scope and content of the prior art; 2) ascertaining the differences between the prior art and the claims in issue; 3) resolving the level of ordinary skill in the pertinent art; and 4) evaluating evidence of secondary considerations. *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966). In rejecting claims, the Patent Office bears the burden of persuasion in establishing a *prima facie* case of obviousness. To achieve this, the Patent Office must show three criteria: 1) a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine teachings; 2) a reasonable expectation of success; and 3) that the prior art must teach or suggest all

claimed limitations. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See also MPEP §2143. In the present case, the Patent Office has not met this burden.

In applying 35 U.S.C. §103(a), the Patent Office must: 1) consider the claimed invention as a whole; 2) consider the references as a whole when determining whether the references suggest the desirability of making a combination; 3) consider the references without the benefit of impermissible hindsight consideration of Applicants' disclosure; and 4) use a reasonable standard of success as the standard from which obviousness is determined. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143, 229 USPQ 182, 187 (Fed. Cir. 1986).

In this case, it appears that the Examiner is not looking at the invention "as a whole", but instead is improperly focusing on the differences between the claims and the references (*i.e.*, providing an angled panel instead of a flat panel in the claimed combination). However, patent case law is clear that in considering the differences, the question is not whether the differences themselves would have been obvious, but rather whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983). Distilling an invention down to the gist of the invention disregards the requirement of analyzing the subject matter "as a whole." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983, *cert. denied*, 469 U.S. 851 (1984)). In addition, it is irrelevant in determining obviousness that all or all other aspects of the claim may have been well known in the art. *Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 220 USPQ 97, 99-100 (Fed. Cir. 1983). The invention must be considered "as a whole."

In order to consider the invention "as a whole", however, the Examiner must view the context in which the invention was made, problems solved by the invention and the like. See *In re Antonie*, 559 F.2d 618, 620, 195 USPQ 6, 8 (CCPA 1977) where it was held that in delineating the

invention as a whole, one looks "not only to the subject matter literally recited in the claims . . . but also to the properties of the subject matter which are inherent in the subject matter and are disclosed in the specification." *Also see In re Sponnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969) where it was found that the discovery of the source of a problem is also part of the "subject matter as a whole" inquiry. The Examiner has not made this inquiry.

In this regard, the claimed invention is directed to a patch panel for a network rack. Such patch panels are mounted in racks, such as the rack illustrated in Applicants' Fig. 4. As is well known to one of ordinary skill in this art (*i.e.*, the field of patch panel systems), commercially available data switches work in multiples of 12 and corresponding patch panels have similar multiples of ports. Thus, patch panels in this environment provide for a number of ports in multiples of 12 (*e.g.*, 12, 24, 36 or 48 ports per patch panel). It is also well known to one skilled in this art that it would be desirable to increase the density of connectors within a rack unit consistent with active equipment density (*i.e.* data switches) and typical cable layout. Because of the size of the connectors, the bulk of the associated cables and the fixed width and height of the rack housing the patch panel, there are limited options to add more connectors. It is known to make the patch panel of an increased height. For example, a single height rack mount has a typical spacing of 1.75". A double height rack mount would occupy two spaces and have a height of about 3.5". However, this does not increase the total available connectors for the system because the rack also has a fixed height, and increasing the height of the patch panel just means that less patch panels can be mounted on the rack. As such, capacity increase is typically limited to use of a larger number of racks, which, in turn, occupies more floor space.

Also affecting this situation, as is well known to one of ordinary skill in the art, is the fact that current commercial products cannot even take full advantage of the available height of the rack

because of the need for horizontal cable management. That is, most patch panel rack systems route the cabling from the patch panel to the sides of the rack, where vertical cable managers then vertically route the cables to their destination. Horizontal cable management is required for many cabling types, such as fiber optic and copper cabling, in order to guide and support the cable from the patch panel to the vertical cable managers. This is particularly important to ensure minimum bend radius control. Because of this need for horizontal cable management, conventional prior art rack systems concerned with maintaining proper bend radius control could only use one-half of the available rack space, because of the need for horizontal cable managers located immediately above and/or below each patch panel to control the positioning and guiding of the cabling to the vertical cable managers. Such horizontal cable managers provided a horizontally extended duct that received cables perpendicular to the duct and then routed the cables laterally to the sides.

The present invention solves these competing problems of increasing rack capacity while also providing proper cable management. This is achieved by providing a patch panel configuration that better orients and angles the various exiting cabling toward a laterally spaced vertical cable manager. This orientation allows for a horizontal run of cabling that does not require horizontal cable managers located above and/or below the patch panels. The effective capacity of the rack can now be doubled because more panels (but not more cables per panel) can be received in a given vertical space. None of the prior art shows this feature or provides this advantage, regardless of whether the prior art is considered alone or in combination.

The significantly increased capacity is not caused by the relatively negligible increase in surface area of the patch panel, but is achieved by the elimination of the need for horizontal cable managers provided above or below each patch panel. Thus, whereas a conventional patch panel system may have the capability to hold, for example, 10 patch panels, it could effectively use only

5 because of the need for 5 horizontal cable managers occupying the other 5 slots on the rack. However, the present invention can allow for full use of the rack, for example 10 patch panels on a 10 panel height rack. This effectively doubles the capacity of the rack system by eliminating the need for costly horizontal cable management.

Standish discloses a flat patch panel utilized within a conventional telecommunication patch panel system, and *Puetz* discloses a fully enclosed device that houses fiber optic telecommunication equipment. *Puetz* is primarily concerned with equipment housed in buried or underground vaults, and the disclosed embodiments of *Puetz* all use a generally circular base enclosure having a bottom access port for passing through cabling. See col. 1, lines 19-39. More particularly, *Puetz* discloses a panel 50 mountable to flanges 32, 34 of a splice tray support 30. *Puetz* also discloses downwardly angled brackets 60 positioned within openings 51, and a plurality of fiber optic adapters 62 provided on the front side and connected to fiber optic connectors 64. A plurality of fiber optic connectors 68 are attached on the opposite side of adaptors 62. See Figs. 1, 2 and 4 and col. 4, lines 10-31. The cabling runs vertically downward, with all cabling exiting the bottom of the apparatus. See Fig. 1.

Puetz is directed to an entirely different application within an entirely different environment than that of the claimed invention or that of *Standish*. As such, the problems faced and solved by these patents are wholly different. *Puetz* is not concerned with or appreciative of problems with horizontal cable management since the cabling in *Puetz* is routed vertically downward. Thus, one of ordinary skill in the art concerned with the problems faced by the present invention would not have been motivated to look to *Puetz*.

It appears that the Examiner is not considering the applied references "as a whole" as required in order to find possible motivation for modification of *Standish* or combination with other art, such as *Puetz*. Rather, it appears that the Examiner is improperly using hindsight consideration

of Applicants' specification in reaching such conclusions of obviousness. In this regard, a prior art reference must be considered in its entirety, "as a whole," including portions that would lead away from the claimed invention. See *W.L. Gore & Associates, Inc.* In particular, the Examiner has not identified any basis in the cited references to establish the requisite motivation for modification.

In order to fully answer the obviousness question, one must determine who is "one of ordinary skill in the art." In considering the level of ordinary skill in the art, factors that may be considered include "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696, 218 USPQ 865, 868 (Fed. Cir. 1983, *cert. denied*, 464 U.S. 1043 (1984)). The "importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." *Ryko Mfg. Co. v Nu-Star, Inc.*, 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991). Thus, the Examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge or a layman." *Environmental Designs*.

In this case, one of ordinary skill in the art should be a person familiar with either the design or use of rack mounted patch panel systems. Such a person would be aware of their use and limitations, as well as their need for horizontal cable management. A person having experience in the field of rack mounted patch panel systems of a conventional flat panel type would readily appreciate and know that such systems operate with active equipment such as data switches that utilize multiples of 12, as discussed above. The increase in surface area caused by bending the panel, as taught by *Puetz*, would be useless in a rack mounted patch panel system as claimed or as disclosed in *Standish*, because it would not even come close to providing enough increased space

to add at least 12 more ports to the panel. Thus, one skilled in the art would see that there is no reason to bend the panel based on the teachings of *Puetz*. Rather, at best, it would result in farther spaced connectors. As such, this teaching would not have motivated one of ordinary skill in the art to incorporate the panel as in *Puetz* into a conventional horizontal rack patch panel system since to do so would have no appreciable purpose or benefit.

In this regard, one of ordinary skill in the art of patch panel rack systems would also readily understand from *Puetz* Fig. 4 that because *Puetz* utilizes angled panel sections, the support brackets for the connectors were angled downwardly to avoid the interference between connectors on the back side of the panel sections, particularly near the center. Because of this, the connector support brackets occupy more of the vertical space allotted, and this works against any "increase" in capacity. As such, when read "as a whole", *Puetz* actually teaches away from the present invention and one of ordinary skill in the art would not have perceived any benefit to an angled configuration over a flat configuration when used in a conventional rack mount system.

Moreover, when read "as a whole", one of ordinary skill in the art would not have come away with a sense that *Puetz* was teaching an advantage by increase in capacity for other reasons as well. Because *Puetz* teaches to angle the cabling all downward, the cabling actually runs on top of lower layers of switches. Because of this, even if there were marginal, useful improvement in horizontal capacity (which there is not) due to the angled panel for this application, there is reduced vertical capacity due to the cascaded downward angling and vertical running of the cabling. As such, overall, one of ordinary skill in the art looking to improve capacity would not have considered the *Puetz* teachings to be relevant since total capacity appears to be reduced by the *Puetz* arrangement and there are incompatibility and other problems with the downward cable mounting.

Furthermore, because *Puetz* is not concerned with horizontal cable management and only provides vertical runs of cabling, one of ordinary skill in the art would not have been motivated to look to *Puetz* for any guidance on how to improve horizontal cable management. Additionally, when considering the context of horizontal cable management, *Puetz* provides no teaching or suggestion of how the panel arrangement and switch connectors would ease or eliminate the need for horizontal cable management. Rather, to the contrary, because of the teaching of vertical cable management, *Puetz*, if anything, when read "as a whole", teaches away from an application where horizontal runs of the cable are present, as in the claimed invention. In fact, only the present inventors have recognized that bending the panel in the claimed combination (*i.e.*, in a patch panel mountable in a network rack) eliminates the need for horizontal cable management above and below the panels, thereby increasing the capacity of the rack (but not of each panel).

The Examiner at best may rely on the teaching at col. 5, lines 28-33 of *Puetz* that "by providing the dividing line 58 between the angled planes or fields 50a, 50b, an increased density of adapters 62 is provided within the circular dimensions of the enclosure 18 as best shown in FIG. 4. Namely, by providing segmented or arcuate panels 50, 50', an increased surface area for adapters is provided which would otherwise be available with flat panels 50, 50'." However, while this may be true in the specific case and context of *Puetz*, it is not true in the context of the present invention and it would not have been obvious for one of ordinary skill in the art to provide such a panel on a rack patch panel system as claimed for the reasons discussed above. Also, *Standish* already has excess surface area in the middle of frame member 110 which is not being utilized to add extra connectors. Thus, bending patch panel 100 in the middle would not even increase its surface area.

Neither *Standish* nor *Puetz* appreciates the problems solved by the claimed invention. Even if impermissibly combined, the combination fails to render the claimed invention obvious. Thus,

even if the *Standish* and *Puetz* combination was proper, which it is not, it still fails to teach the claimed invention. Each of independent claims 1 and 20 requires a patch panel with a central section including two panel sections angled outwardly in an inverted V-shape, and a substantially flat separator portion connecting the two panel sections. The combination of *Standish* and *Puetz* does not teach such a patch panel.

Finally, assuming that *Standish* could be combined with *Puetz* and that the resulting patch panel would have two angled panel sections, the angle would be based from the middle of the separator portion of *Standish*, not from each of the two ends of the separator portion. Thus, *Standish* as modified by *Puetz* would have an angled separator portion. In contrast, the patch panel of the claimed invention has a substantially flat separator portion with two panel sections angled outwardly from the ends of the separator portion.

CONCLUSION

Applicants have amended independent claims 1 and 20 to require a substantially flat separator portion, in order to move this case quickly to allowance. However, Applicants do not concede that the original claims are unpatentable. Rather, many of the arguments presented above justify broader claims than those presented herein, and Applicants reserve the right to pursue those broader claims in continuations of this application.

In view of the above, Applicants submit that claims 1-16 and 18-29 are allowable and favorable reconsideration is respectfully requested.

If the Examiner has any questions or if for any reason the application is not considered to be in condition for allowance, a telephone call to the undersigned at 708.532.1800, ext. 1302, would be appreciated.

Respectfully submitted,

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